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DISEASES OF THE NERVOUS SYSTEM

A PRACTICAL JOURNAL ON PSYCHIATRY AND NEUROLOGY

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DISEASES of the NERVOUS SYSTEM

A PRACTICAL JOURNAL ON PSYCHIATRY AND NEUROLOGY

EXPERIMENTAL PSYCHIATRY III

A Chemical Concept of Psychosis

MAX RINKEL, M.D., ROBERT W. HYDE, M.D., and HARRY C. SOLOMON, M.D.
Boston, Massachusetts

Biochemical theories in relation to mental diseases have been repeatedly postulated, and discarded for lack of positive evidence. A new chemical concept of psychosis has been brought into focus on the basis of recent research in experimental psychiatry. The experimental reproduction of a temporary psychosis by the revived use of Mescaline[2,9,15,21] and the recently discovered diethylamide tartrate of d-Lysergic Acid (LSD)[22] has permitted comprehensive studies which have led research groups, working independently from each other, to arrive at similar conclusions.

At the Boston Psychopathic Hospital, since 1949, we have been using LSD to induce psychotic conditions.[18] Pertinent observations were obtained from selfexperiments and from more than one hundred normal subjects who voluntarily submitted to LSD experiments.

Methods, Procedure, Controls:

The methods, procedure and controls were simple. The subjects received LSD orally at about 8:00 A.M., in a glass of water, and were kept under observation at the hospital for the rest of the day. The usual amount of LSD, for normal volunteers, was one microgram per kilogram body weight; the smallest amount 0.12 microgram per kilogram body weight, the highest dose two micrograms per kilogram body weight. The following controls were designed: (1) Pre-experimental evaluation of the volunteer's personality and motivation, which, incidentally, allowed predictions of expected reactions. (2) Substitution of plain water for LSD. The subject cannot differentiate between them because LSD is colorless, odorless and tasteless. (3) Keeping the observer occasionally in ignorance whether LSD or plain water was administered. This excludes bias on the part of the observer. (4) A series of seven experiments on one subject, at one-week intervals. On three occasions, LSD was given and on four occasions, plain water, but neither the subject nor the observers knew which the subject received. A code of the experiments was kept and disclosed only after all of the experiments were completed and evaluated.

Results:

A widespread but well integrated interdisciplinary team-work permitted the study of clinical, psychological, sociological, anthropological, physiological and biochemical phenomena.

The *clinical manifestations* depended essentially upon the amount of LSD administered. Doses of one microgram per kilo-

Read before the Ninth Annual Convention and Scientific Meeting of the Society of Biological Psychiatry, Atlantic City, June 13, 1954.
From the Department of Psychiatry, Harvard Medical School, and the Boston Psychopathic Hospital; Dr. Harry C. Solomon, Director.
Aided by a grant from the McCurdy Company, Rochester, New York.

gram body weight, and above, caused phenomena of the schizophrenic turmoil type; doses below one microgram per kilogram body weight more often induced affective reactions. Since the usual dose was one microgram per kilogram body weight, the clinical manifestations were predominantly characterized by a syndrome similar to a moderately acute schizophrenic upheaval of the turmoil or schizo-affective type with or without catatonic features.[3] Disturbances of thought processes and distortions of perception were quite common; other manifestations were related to behavior, affect and mood. Hallucinations, illusions and delusions did occur occasionally. Depersonalizations, suspiciousness, and paranoid reactions were frequently observed. The occurrence of hostility, often associated with extrapunitive or intrapunitive anger, was made the object of a special study[12] and resulted in the observation (among others) that when the subject was hostile, he tended to devaluate the object, "a diabolical face," "a young woman looking one hundred years old"; but when the subject's attitude was affiliative, he tended to overvaluate the object, "big, my very rock of Gibraltar," or "glowing with youth and health." A number of different *psychological tests* (Rorschach, Wechsler-Bellevue, Draw-a-Person, Thematic Apperception) tended to corroborate clinical observation and uncovered new phenomena such as the subjects reduction in organization and integration, loss of emotional control, decrease in orientation to Past and Future. Anxiety and tension were increased in some individuals, and decreased in others, with no consistency for either trend. The individuals apparently were aware of the fact that the LSD experiences were temporary, and insight remained preserved in spite of the drastic intellectual and emotional changes.

Biochemical Studies, for which we had the cooperation of the Worcester Foundation for Experimental Biology, were motivated by the similarity of the mental phenomena of LSD action to those of schizophrenics. The investigation of adrenal cortex responses to LSD promised to be of interest in the light of the relationship of the adrenal cortex to schizophrenia (i.e. reduced responsivity of schizophrenia patients to experimental stresses and test doses of ACTH).[8,16,17] Schizophrenic patients excrete, on the average, less inorganic phosphates than normals, but under stressful situations, the phosphate excretion becomes increased. Stress, by injecting ACTH or adrenal cortical extract, also causes a release of endogenous corticoids.

The *design* and *procedure* of these experiments were as follows: One day was devoted to controls, another day to the actual LSD experiment. Urine samples were collected from the time of rising until 9:00 A.M.; a second urine sample represented the urine produced from 9:00 A.M. until 3:00 P.M.; an intramuscular injection of 25 mg. of ACTH was then given at 3:00 P.M., and a third urine sample was collected at 6:00 P.M. The procedure on the experimental day differed only in that the volunteer received 0.5 microgram per kilogram body weight of LSD at 9:00 A.M. The urine samples were analyzed for rates of excretion of urine, creatinine, 17-ketosteroids, sodium, potassium, phosphates and uric acid. The *results* were compiled and summarized by Dr. Hudson Hoagland as follows: (1) LSD appeared to stimulate the pituitary-adrenal axis, probably after the manner of a nonspecific stressor. (2) LSD seemed to render the adrenal somewhat unresponsive to ACTH stimulation, as schizophrenia causes the adrenal to be subnormally responsive to ACTH; a similarity which is quite suggestive. (3) LSD *depressed* the urinary *phosphate* output but increased it under the additional stimulation of ACTH. This behavior of the inorganic phosphate followed the pattern that was found in schizophrenic patients. Naturally, more experiments are needed before too much weight can be attached to any of the biochemical observations.

Phenomena of the *Autonomic Nervous System,* observed by most authors, especially Forrer and Goldner,[5] Savage,[19] and Hoffer,[10] were present in all instances. It is worth noting that they always preceded the mental phenomena. They occurred as subjective feelings, and were objectively investigated by clinical observation, polygraphic recordings and pharmacodynamic methods. The

subjective autonomic experiences manifested themselves as dysfunctions of the different organ systems. On *objective* examination, it was noted that on LSD days, the *pupils* gradually dilated from 3 mm. to 5.25 mm. during a two hour and forty-five minute time interval. Psychodynamic interviews, however, did not influence this phenomenon, as the controls convincingly demonstrate. The *blood pressure* was slightly lower after LSD than on control days; however, with LSD the blood pressure became somewhat higher after a psychodynamic interview (average 132/94 mm/Hg) and somewhat lower on control days (average 125/99 mm/Hg). *Heart rate* and *respiration* were polygraphically recorded. The analysis of the recordings revealed that the heart rate was higher under the influence of LSD than normal and more stable. The respiration during LSD-action was faster and showed a greater variability in length and depth.

The *pharmacodynamic* examination of the Autonomic Nervous System was performed on 11 schizophrenics and 4 patients with affective disorders. Synthetic Nor-epinephrine, 0.025 mg. i.v., synthetic Epinephrine, 0.025 mg. i.v., and Acetylbetamethyl-choline (Mecholyl), 2.5 mg. i.m. were used to test the autonomic reactivity following the oral administration of 0.5 microgram per kilogram body weight of LSD. The systolic blood pressure response under LSD to Nor-epinephrine (61.5 mm/Hg) was not significantly different from the controls (68.2 mm/Hg), but the response to Epinephrine was significantly lower after the administration of LSD (57.6 mm/Hg) than on control days (85.4 mm/Hg). There was only a slight reaction of the parasympathetic system to 2.5 mg. of Mecholyl after the effect of LSD had become manifest. More pronounced responses to Epinephrine and Mecholyl, however, were observed in a successfully lobotomized patient who was selected for this examination because of the hypersensitive autonomic system of such patients. It may also be noted that this patient under LSD relapsed into the pre-lobotomized physical and also mental state of agitation which subsided in the following few hours.

Chemical Concept of Psychosis:

In analyzing our observations and those reported in the literature, we were led to assume that LSD may interfere with a major enzyme system.

The most outstanding phenomena seemed to implicate the adrenalin system. These phenomena included: Dilation of the pupils; changes in blood pressure; changes in heart rate and its stability; increased rate of respiration; varied responses to Epinephrine and Nor-epinephrine; mild response to Mecholyl; and manifestations of hostility with associated extrapunitive and intrapunitive anger. The relationship of emotions to the adrenalin system has been demonstrated by W. B. Cannon.[1] D. Funkenstein,[6] of our hospital, further advanced knowledge of this relationship by uncovering the fact that extrapunitive anger was associated with an abundant release of Nor-epinephrine-like substances and the intrapunitive anger was characterized by an over-release of Epinephrine-like substances.

Further evidence of a relationship of psychotic-like phenomena to adrenalin was offered by Feldberg and Witt. Feldberg and Sherwood[4] injected adrenalin into the lateral ventricle of the cat and obtained, among other symptoms, postural phenomena, the pictures of which reminded us of the flexibilitas cerea of the catatonic schizophrenic. Witt[23] fed LSD to spiders and observed that their performance in spinning their net was more nearly perfect, "as if they were withdrawn and concentrated only on their task." However, although the net seemed to be more precisely made, on closer examination one can see that each thread is much thinner than in the control. This offered another speculation, namely that the adrenalin supply of the spider became exhausted. It is well known that the spider web consists chemically almost evclusively of adrenalin, which accounts for its hemostatic effect.

These phenomena occurring in the artificially induced experimental psychosis logically lead to the assumption that in the psychoses the enzyme system of the adrenalin cycle may be involved.

The assumption of an involvement of the adrenalin cycle in psychosis is not particularly surprising in the light of the fact that a number of clinical conditions are already known to be the result of natural errors in

the Phenylalanine-Tyrosin-Adrenalin cycle. Such clinical entities are the Phenylpyruvic acid oligophrenia which is characterized by the inability of the phenylpyruvic acid molecule to be converted into the p-Hydroxy molecule, and the Tyrosinosis of newborn infants, which is manifested by the excretion of Tyrosine. Tyrosinosis is associated with and remedied by ascorbic acid which is essential for oxidation of Tyrosin. Other conditions are Albinism, which results from the inability of adrenalin to be broken down to its end-products, Melanin, and Alcaptonuria which is caused by the inability of the organism to further decompose Homogentisic acid.[13]

Although the facts of experimental observations strongly suggest an LSD interference somewhere within the adrenalin cycle, the question as to the possible involvement of another enzyme cycle cannot be omitted. Mayer-Gross et al.[14] investigated the influence of LSD upon the Carbohydrate Cycle and reported an interference at the Hexosemonosphosphate level. They deduced that the LSD effect could be counteracted by raising the blood sugar level to 200-300 mg. percent; following this suggestion, we, however, could not confirm their deduction by our experiments on normal volunteers.

If one accepts the assumption that LSD interferes with the adrenalin cycle, the following questions naturally occur: At what stage of the cycle does the interference take place and which metabolite becomes the noxious agent? Can the metabolite be identified on the basis of already known facts? The answer to these questions must take into consideration that the adrenalin cycle is not yet completely explored and established. However, some information is available which may offer a possible solution.

P. Heirman,[7] in 1938, described a metabolite of adrenalin which he named, *Adrenoxine*. He obtained this chemical by prolonging the oxidation of adrenalin beyond the adrenochrome level, by means of Tyrosinase. The solution of adrenoxine was slightly pink, and stable for four days, if kept on ice. Heirman described further physical and chemical properties of adrenoxine, and especially reported its physiological effects upon the inotropism and chronotropism of the frog's heart. He observed, following the administration of adrenoxine, a slight fall in blood pressure which lasted from one and a half to two hours. Evidently, adrenoxine is physiologically very active, and some of its physiological effects seem to be similar to those we have noted following the administration of LSD. Of the mental effects of adrenoxine, we have no first-hand knowledge because Heirman's experiments were done on animals. However, a lead in this direction was found in a different interpretation of experiments reported by another research group.

Osmond and Smythies,[15] in 1950, published an imaginative essay on "a new approach to schizophrenia." They called attention to the similarity of the molecular structure of Mescaline and Adrenalin and postulated that a substance "M," originated in the organism, may cause psychosis. In further pursuit of this idea, Hoffer, Osmond and Smythies,[11] investigated the adrenalin metabolite, *adrenochrome,* and dramatically reported psychotic phenomena experienced in self-experiments and observed on a few volunteers. Naturally, we tried to duplicate their experiments. We used the commercial adrenochrome, available in this country, also in self-experiments and on a number of volunteers. However, our experiments had a completely negative result. No mental alterations were experienced or observed, and no mental symptoms have been reported, although adrenochrome, because of its strongly hemostatic effect, has been widely used in surgery. In a personal communication, Dr. Sherber[20] reported his use of adrenochrome on over one hundred surgical patients, in none of whom were any mental changes observed.

The obvious discrepancy in the result of our experiments with adrenochrome and that reported by Hoffer, Osmond and Smythies, seemed, however, to find an explanation in their statement that the home-made adrenochrome solution they used was "unstable" and "deteriorating." That statement strongly indicates the probability that part of their deteriorating adrenochrome solution may have contained the further oxidation product, adrenoxine, which Heirman described. Thus, we can assume that adrenoxine, in ad-

dition to its LSD-like physiological effects, also may have mental effects similar to those obtained by LSD interference with the adrenalin cycle. If this assumption proves to be correct, the conclusion will become inevitable that adrenoxine, a natural metabolite of the decomposition of adrenalin, may well be operative in psychosis. This, of course, leads to a new chemical concept of mental illness. Further investigation should, therefore, be directed to testing the effects of adrenoxine. The molecular structure of adrenoxine has not been established, as yet, but we hope to obtain it soon, with the cooperation of a leading American chemical company.

Summary:

Experimental evidence has been presented that seems to indicate that a natural error in the adrenalin cycle may be an important, although probably not the only, factor in the origination of psychosis. This brings into focus a new chemical concept of psychosis, and calls for more intensive research in experimental psychiatry in the production of artificial psychosis.

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BIBLIOGRAPHY

1. (1) Cannon, W. B.: Bodily changes in pain, hunger, fear and rage. 2nd Edit. *D. Appleton & Co.,* 1929.
(2) Cannon, W. B.: Wisdom of the body. Revised & Enlarged Edit. N. Y. *W. W. Norton & Co.,* 1939.

2. De Jong, H.: Über meskalin-katatonie und die experimentelle Erzeugung von Dementia praecox Erscheinungen. (On mescalin catatonia and the experimental production of dementia praecox symptoms.) *Koninklijke Akademie Van Wetenschappen Te Amsterdam. Proceedings,* 33:1076-1081, 1930.

3. De Shon, H. J., Rinkel, M., and Solomon, H. C.: Mental changes experimentally produced by LSD (d-lysergic acid diethylamide tartrate). *Psychiat. Quart.* 26:33-53, January 1952.

4. Feldberg, W., Sherwood, S. L.: Injections of drugs into the lateral ventricle of the cat. (1) Lecture given at Boston Psychopathic Hospital. (2) *J. Physiol. (Brit.)* 123:148-167, 1954.

5. Forrer, G. R., Goldner, R. D.: Experimental physiological studies with lysergic acid diethylamide (LSD 25). *Arch. Neurol.* (Am.), 65:581, 1951.

6. (1) Funkenstein, D. H., Greenblatt, M., and Solomon, H. C.: Nor-epinephrine-like and epinephrine-like substances in psychotic and psychoneurotic patients. *Am. J. Psychiat.,* 108:652-662, March 1952.
(2) Funkenstein, D. H., Greenblatt, M., Solomon, H. C.: Psychophysiological study of mentally ill patients: Part I: The status of the peripheral autonomic nervous system as determined by the reaction to epinephrine and mecholyl. *Am. J. Psychiat.,* 106:16-28, July 1949.
(3) Funkenstein, D. H., Greenblatt, M., Solomon, H. C.: Autonomic changes paralleling psychologic changes in mentally ill patients. *J. Nerv. Ment. Dis.,* 114:1-18, July 1951.
(4) Funkenstein, D. H., Greenblatt, M.: Norepinephrine-like and epinephrine-like substances and the elevation of blood pressure during acute stress. *J. Nerv. Ment. Dis.* (In press.)
(5) Funkenstein, D. H., King, S. H., Drolette, M.: The experimental evocation of stress. Symposium on Stress, National Research Council and Army Medical Service Graduate School, Walter Reed Army Medical Center, Washington, D.C., pp. 303-322, 1953.
(6) Funkenstein, D. H., King, S. H., Drolette, M.: Studies on stress: interrelationship of emotional responses and cardioballistographic tracings. *Arch. Neurol. & Psychiat.* (In Press.)
(7) Funkenstein, D. H., King, S. H., Drolette, M.: A study of the direction of anger during a laboratory stress-inducing situation. *Psychosom. med.* (In press.)
(8) Funkenstein, D. H.: Discussional remarks. Symposium on Depression. Proceedings Forty-Second Annual Meeting Am. Psychopathological Assn., p. 183-189, 1952.

7. (1) Heirman, P.: Quelques propriétés physiques de l'adrenoxine. (Some physical properties of adrenoxine). Comptes. rendus. *Societé de Biologie, Paris,* 127:345, 1938.
(2) Heirman, P.: L'adrenoxine, adrénaline oxydée inhibitrice. (Adrenoxine, inhibitory oxidized adrenalin). Comptes rendus. *Soc. de Biologie,* Paris, 126:1264, 1937.

8. Hoagland, H., Pincus, G., Elmadjian, F., Romanoff, L., Freeman, H., Hope, J., Ballan, J., Berkeley, A., Carlo, J.: Study of adrenocortical physiology in normal and schizophrenic men. *Arch. Neur. & Psychiat.,* 69:470, 1953.

9. Hoch, P. H., Cattell, J. P., Pennes, H. H.: Effects of mescaline and lysergic acid (LSD-25). *Am. J. Psychiat.,* 108:579, 1952.

10. Hoffer, A.: Effect of atropine on blood pressure of patients with mental and emotional disease. *Arch. Neurol. & Psychiat.,* 71:80-86, January 1954.

11. Hoffer, A., Osmond, H., Smythies, J.: Schizophrenia: A new approach II. Result of a year's research. *J. Ment. Sci.,* 100, No. 418, January 1954.

12. Hyde, R. W., Von Mering, O., Morimoto, K.: Hostility in the lysergic psychosis. *J. Nerv. & Ment. Dis.,* 118:266-267, September 1953.

13. Martin, G. J.: (1) Biological Antagonism. *The Blakiston Company,* Philadelphia, 1951. (2) Personal communication.
14. (1) Mayer-Gross, W., McAdam, W., Walker, J. W.: Psychological and biochemical effects of lysergic acid diethylamide. *Nature,* 168:827, 1951.
(2) Mayer-Gross, W., McAdam, W., Walker, J.: Lysergsäure-Diäthylamid und Kohlenhydratstoffwechsel. (Lysergic acid diethylamide and carbohydrate metabolism.) *Nervenarzt,* 23:30, 1952.
15. Osmond, H., Smythies, J.: Schizophrenia: A new approach. *J. Ment. Sci.,* 98:309-315, 1952.
16. Pincus, G., Hoagland, H.: Adrenal cortical responses to stress in normal men and in those with personality disorders: Some stress responses in normal and psychotic subjects. *Am. J. Psychiat.,* 106:641, 1950.
17. Pincus, G., Hoagland, H., Freeman, H., Elmadjian, F., Romanoff, L.: A study of pituitary-adrenocortical fundation in normal and psychotic men. *Psychosom. Med.,* 11:74, 1949.
18. (1) Rinkel, M.: Discussion Meet. Amer. Psych. Assn., Detroit, May 1950. *J. Clin. Psychopath.,* 12:42, January 1951.
(2) Rinkel, M., De Shon, H. J., Hyde, R. W., Solomon, H. C.: Experimental schizophrenia-like symptoms. *Am. J. Psychiat.,* 108:572-578, February 1952.
(3) Rinkel, M., Greenblatt, M., Coon, G. P., Solomon, H. C.: The effect of bilateral frontal lobotomy upon the autonomic nervous system. *Am. J. Psychiat.,* 104:81-82, August 1947.
(4) Rinkel, M., Greenblatt, M., Coon, G. P., Solomon, H. C.: Relation of the frontal lobe to the autonomic nervous system in man. *Arch. Neur. & Psychiat.,* 58:570-581, November 1947.
(5) Rinkel, M., Solomon, H. C.: Stirnhirn und autonomes Nervensystem. (Frontal lobe and autonomic nervous system.) *Monatsschrift fur Psychiat. & Neur.,* 117:334-359, 1949.
(6) Rinkel, M., Solomon, H. C.: Autonomic physiology of the frontal lobe in man. Comptes Rendus des Séances, Premier Congrès Mondial de Psychiatrie, III: 127-134, Paris 1950 (*Hermann & Co.,* Publishers, 1952).
(7) Rinkel, M., Hyde, R. W., Solomon, H. C.: Experimental Psychiatry: Clinical and physiochemical observations in experimental psychosis. *Am. J. Psychiat.* (In press.)
19. Savage, C.: Lysergic acid diethylamide (LSD 25)—A clinical-psychological study. *Am. J. Psychiat.,* 108:896, 1952.
20. Sherber, D. A.: (1) The control of bleeding. *Am. J. Surg.,* 86:331-335, September 1953. (2) Personal communication.
21. Stockings, G. T.: A clinical study of the mescaline psychosis, with special reference to the mechanism of the genesis of schizophrenia and other psychotic states. *J. Ment. Sci.,* 86:29-47, 1940.
22. (1) Stoll, A.: Les alcaloides de l'ergot. (The alkaloids of ergot.) *Experientia,* 1:250, 1945.
(2) Stoll, A., Hoffmann, A.: Partialsynthese von Alkaloiden vom typus des Ergobasins. (Partial synthesis of alkaloids of the type of the ergobasin.) *Helv. chim. Acta,* 26:944, 1943.
(3) Stoll, A., Hofmann, A., Troxler, F.: Über die Isomerie von Lysergsäure und Isolysergsäure. (On the isometry of lysergic acid and isolysergic acid.) *Helv. Chim. Acta,* 32: (fasceculus secundus) 506-521, 1949.
(4) Stoll, W. A.: Lysergsäure-diäthylamid, ein Phantastikum aus der Mutterkorngruppe. (Lysergic acid diethylamide, a phantasticum of the ergot group.) *Schweiz. Arch. Neurol. Psych.,* 60:279, 1947.
(5) Stoll, W. A.: Psychische Wirkung eines Mutterkornstoffes in ungewöhnlich schwacher Dosierung. (The mental effect produced by an unusually small dose of an ergot substance.) *Schweiz. med. Wschr.,* 79:110, 1949.
23. Witt, P. N.: D-lysergsäure-diäthylamid (LSD 25) im Spinnentest. (d-Lysergic acid diethylamide in the spider test.) *Experientia,* 7:310, 1951.

The Arnold-Chiari Malformation

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The Arnold-Chiari Malformation, first noted by Arnold in 1894, is a developmental anomaly of the cervico-medullary juncture of some clinical importance. The most constant feature of it is a downward elongation of the cerebellum and medulla into the spinal canal. It is found frequently in infants usually in conjunction with spina bifida and related conditions. In adults its occurrence has generally been in conjunction with bony anomalies of the cranio vertebral junction such as occipitalization of the first cervical vertebra, fusion abnormalities of the cervical spine or platybasia of varying degree.

In adults the signs and symptoms of the Arnold-Chiari malformation are usually varied and inconstant. Most often the findings suggest a posterior fossa tumor. The most common symptoms include headache, usually suboccipital with exacerbation of pain on

movement of the head on the neck, motor or reflex changes in the extremities, nystagmus, cerebellar dysfunction and sensory loss.

Diagnosis involves differentiation from such conditions as multiple sclerosis, chronic adhesive arachnoiditis, high cervical or brain stem tumor, degenerative disease of the cerebellum, syringomyelia or syringobulbia.

In addition to x-rays of the skull and cervical spine, lumbar puncture and myelography are valuable diagnostic aids. Partial or complete subarachnoid block may be found and myelography may delineate the herniated portion of the cerebellum. However, in many cases the possibility of an Arnold-Chiari malformation is not suggested by the presenting symptoms and myelography may not be attempted.

This paper reports two cases of the Arnold-Chiari malformation. The first case is in an adult without accompanying craniovertebral anomaly or spina bifida and illustrates extreme latency of symptoms. The second one, also in an adult, occurred with bony anomaly and is presented to illustrate the ease and risk of incorrect diagnosis.

A 38 year old man was seen in January 1948, three months after an auto accident. He complained of almost daily frontal headaches, intermittent, brief "blackout" periods, weakness of the left side of the body and bilateral ringing in the ears. He had been unconscious for a short period and dazed for several days after the accident. It was reported that prior to the accident he had been apparently a healthy individual with no complaints or appearance of neurologic impairment.

Examination revealed some weakness of the left extremities but there were no definite reflex changes. Sensory perception was normal. The man had a positive Romberg Test to the left side and other tests showed poor coordination of movements of the left side. The optic fundi appeared normal. The left pupil was slightly larger than the right and there was partial loss of hearing bilaterally.

When the symptoms persisted unabated during a month of observation and symptomatic treatment at home, the patient was hospitalized. At that time he walked slowly with a widened base and with very little associated movements. His Romberg was positive with falling to the left and definite incoordination was noted on the left side. There was loss of motor power of the left extremities and the deep tendon reflexes on the right were slightly hyperactive over those on the left. There was unsustained ankle clonus on the left. The pupillary inequality was still present and there were nystagmoid movements on gaze to the left. Hearing was found to be bilaterally diminished but more so on the left.

Routine laboratory studies including serology were within normal limits.

An electroencephalogram did not reveal any dysrhythmia or evidence of focal or diffuse brain damage. Skull x-rays demonstrated a diffuse increase in density in the posterior fossa involving both occipital bones. There was extensive increase in prominence of the convolutional markings throughout the calvarium and thinning of the posterior clinoids. An x-ray impression of a posterior fossa lesion possibly a meningioma was ventured.

In the absence of papilledema a cautious spinal tap was made. There was no evidence of block and the quantitative protein of the spinal fluid was 28 mgm. per cent. Pneumoencephalography was attempted later but there was unsatisfactory visualization of the ventricular system and subarachnoid channels. Because the Arnold-Chiari malformation was not considered, myelography was not done. A ventriculogram revealed great dilatation of the lateral and third ventricles without any shift. Because of the evidence of obstruction in the posterior fossa, a suboccipital craniectomy was made. The occipital bone was thick but there was no evidence of platybasia or other anomaly. The dura was quite distended and appeared thicker than normal when opened. The cerebellum was edematous and both tonsils were herniated below the level of the foramen magnum. No tumor mass was found in the cerebellum and the fourth ventricle was visualized and appeared normal. An unsuccessful attempt to determine the patency of the aqueduct was made by injecting saline into the lateral ventricle via the ventriculogram burr hole. In addition to the cerebellar and medullary herniation there was considerable

thickening of the arachnoid at the level of the foramen magnum which bound down the cerebellar tonsils. This was freed but no attempt was made to resect the tonsils. The dura was left open at the level of the foramen magnum and the wound closed in layers. Three weeks later indigo carmen was inserted by ventricular tap and recovered from the spinal fluid by lumbar tap. The patient made a gradual recovery. Prior to his release x-rays of his entire spine were made and found normal. Check-ups for two years after surgery revealed that the man had made slow improvement and although not free of neurologic impairment was functioning in a satisfactory manner.

The final diagnoses were: (1) Arnold-Chiari Malformation, (2) Secondary hydrocephalus. It is obvious that the very advanced hydrocephalus was not produced by the trauma alone which was blamed for the causation of the illness. The hydrocephalus attested the ancient origin of the underlying cerebral anomaly. The well documented history of the case establishes that cerebral trauma with subsequent cerebral edema contributed enough additional handicap through a change in intracranial dynamics to produce the clinical picture. This may have been due to further narrowing or even closure of the aqueduct by the edema and by increased herniation of the cerebellar tonsils and medulla through the foramen magnum.

The second case is that of a woman now 37 years old who was first seen in 1943 because of difficulty in swallowing and in walking. She gave the history that her first symptom was difficulty in walking. It began in 1939 and had progressed until she was barely able to get around. Examination in 1943 revealed nystagmus, slurring of speech, ataxic gait and general hyper-reflexia. Examination of the spinal fluid did not show any block and the laboratory findings were within normal limits. Routine skull x-rays appeared negative. Her course during the next few years was one of exacerbation and remission but with ever downward course. In 1948 examination revealed some inequality of tendon reflexes in the upper extremities and a diminution in tactile, vibratory and position sense perception in the left hand. The other neurologic findings were present as in 1943. X-rays of the cervical spine revealed what appeared to be an anomaly of the upper cervical vertebrae and apparently some posterior dislocation of the axis. A lumbar tap revealed a partial subarachnoid block. A suboccipital craniectomy was made and the atlas was found fused to the occiput. The left side of the occipital bone was much thicker than the right. Upon opening the dura a typical Arnold-Chiari Malformation was exposed with the cerebellar tonsils herniated thru centimeters below the foramen magnum. A generous decompression was made. Post-operatively she made gradual improvement noted most in her speech and swallowing.

When seen a number of months later, she was walking much better, but still had difficulty with coordination. Her general course since has been one of gradual improvement.

Summary

Two cases of Arnold-Chiari Malformation in adults have been presented to illustrate (1) the extreme latency of symptoms possible with confusion in diagnosis due to the unrelated precipitating factors and (2) the marked resemblance of symptoms in some cases to those seen in multiple sclerosis with consequent risk in mis-diagnosis and treatment.

It has been suggested that the fundamental mechanism in development of the Arnold-Chiari malformation in adults is obstructive hydrocephalus producing foraminal hernia by pressure. The mild hydrocephalus and Arnold-Chiari malformation are compensated in infancy; but with growth there is an increasing density of the aging connective tissues in the posterior fossa. This causes the outlets of the fourth ventricle to become less pervious so that an increasing head of pressure is required to filter the fluid through to the subarachnoid cistern. The resulting progression is responsible for the gradually developing symptoms.

It has been suggested that the Arnold-Chiari malformation is primarily a mal-development of the hind brain. It may coincide with the time of closure of the medullary tube or somewhat later corresponding with the formation of spina bifida or myelomeningocele. It may be that hyperthermia

occurring in the third week of gestation is a prime factor in initiating mesenchymal defects. Probably hydrocephalus and low spinal cord fixation are secondary factors which tend to increase the downward displacement. The occurrence of Arnold-Chiari defects in adults without evidence of mesenchymal defects would seem to favor the etiologic theory of congenital mal-development of the hind brain.

The "Non-Shock" Therapies

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The development of shock treatment as a major form of psychiatric therapy has emphasized the concept of radical and abrupt change in the psychic state of a mentally ill person for cure or amelioration of the illness. This psychic change consists of unconsciousness produced either abruptly by electrical means and associated with a generalized convulsion or more slowly by the employment of insulin and associated with varying degrees of coma. Many modifications of the basic treatment, such as altering the characteristics of the electrical current applied, have been studied without affecting the fundamental principle involved in shock therapy, namely, that of inducing unconsciousness. However, more recently, trends in bio-psychiatric therapy have consisted of attempts to deviate from the production of profound unconsciousness, or deep coma, and to develop technics which induce only partial or very short periods of impairment of consciousness, or which stimulate or inhibit the functional activity of localized or specific areas of the central nervous system. These newer technics may be termed the "non-shock" therapies (NST) temporarily, for want of a better term and for purposes of contrasting them with the shock therapies, and are attempts to modify the severity of shock therapy, and to introduce technics which are associated with less hazards and less complications. Many varieties of biologic treatment may be classified in the category of NST, but this discussion will be limited to the following two general groups:

(a) Those treatments which result in varying degrees of partial impairment of consciousness or very short periods of unconsciousness without the deep coma of insulin treatment or the generalized convulsion of electric shock.

(b) Those treatments where direct cerebral stimulation is attempted, either by electrical or chemical means.

In Group (a) may be included the following:

1. Carbon Dioxide gas inhalation.
2. Sub-coma insulin.
3. IV Sodium Amytal treatment.

In Group (b) are included the following:

1. Non-convulsive electrical stimulation.
2. Focal electrical stimulation.
3. Photic-Metrazol stimulation (phomac).

A brief description of each type of treatment will be attempted.

Carbon Dioxide Inhalation Therapy (CDT) for psychiatric patients has been described at length by Meduna, and by subsequent investigators. Meduna first published his observations in 1947[1] and, although originally he employed a mixture of 20% Carbon Dioxide and 80% Oxygen, he later changed to 30% Carbon Dioxide and 70% Oxygen mixture. In some technics the concentration of Carbon Dioxide is increased up to 90% thereby inducing more rapid and deeper coma response. However, in all these instances the patient recovers from the unconscious or confused state very rapidly.

The results of CDT have been reported favorably by Meduna in the treatment of many psychoneuroses.[2] A. E. Bennett[3] on the other hand, stated that his results were doubtful. LaVerne described his own Rapid Coma technic of CO_2 inhalation treatment,[4] and concluded that not only was it superior to the conventional slow coma technic of Meduna in the treatment of the neuroses, but was also effective in the psychoses, and hypochondriacal and obsessive-compulsive states. My own experience in the use of

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CDT is limited, and the therapeutic results inconclusive.

It is of interest to note that Meduna avoids the use of psychotherapy with CDT, while Moriarty,[5] Frank,[6] LaVerne[4] and Wilcox[7] recommend the combined use.

Meduna avoided the use of psychotherapy because he explained the theory of the causation of psychoneurotic symptoms and the healing effect of CO_2 primarily on a neurophysiologic basis.

Others conceive of Carbon Dioxide more as an aid to psychotherapy to release the unconscious and stimulate "abreactions."

Sub-coma or "Ambulatory" Insulin Treatment

Hypoglycemic treatment without the production of coma has been used for a number of years for the treatment of psychiatric conditions. The technics vary considerably and although the term "sub-coma" is generally meant to indicate the absence of any impairment of consciousness during the treatment, in some procedures the insulin is gradually increased to a point where some degree of clouding of consciousness occurs without complete loss of awareness of the surroundings. The reports of this treatment are generally favorable for certain of the less chronic forms of schizophrenia, for the alleviation of anxiety in the psychoneuroses, and for the production of weight gain and better physical status in many of the debilitated patients whose eating habits and desire for food have deteriorated. The procedure has been recommended for other conditions, such as toxic confusional states, post-concussion states, and drug-withdrawal conditions. The wide variety of conditions treated with sub-coma insulin, the areas of disagreement regarding its effectiveness, the absence of sufficient control studies to make careful evaluations of its effectiveness, the rather moderate claims in general of its enthusiasts, all indicate that sub-coma insulin is not a procedure which has very specific indications. However, it is a procedure which can serve very useful purposes in certain cases, can be a helpful adjunct to psychotherapy and can be prescribed in the patient's home with ordinary caution. It should be added, as a word of warning, that in some anxiety states a "paradoxical" reaction occurs, namely, the anxiety may be increased; in some psychotic depressions, the depression may be made worse, and paranoid features may be heightened.

Sodium Amytal Treatment

What has been of recent interest to me with respect to narcotherapy has been its use in psychotic depressions. Injections of 0.25 gm. of Sodium Amytal were given 5 times weekly for 1 to 2 weeks, then 3 to 4 times weekly during the following week, and subsequently 2 to 3 times weekly for 1 or more weeks, until the patient remained substantially improved during the interval between injections at which time the injections were gradually eliminated. As a general rule, each dose of Sodium Amytal usually produces only drowsiness or a short period of light sleep, from which the patient can be readily aroused. Although the use of IV Amytal is not new, the procedure of administration appears to be different. If one is patient in the administration of this technic, some depressives can be spared the necessity of undergoing electro-convulsive therapy. Unless the procedure is prolonged and carried out regularly, the patient may relapse into his depressed state. It may be added that the marked effect of the IV Sodium Amytal seems to be out of proportion to just the narcotic effect which one might anticipate from this relatively small dose of the drug.

Group (b)

1. Non-convulsive Electric Stimulation (NCS)

Much discussion, pro and con, has centered about this type of treatment. It consists in the application of a sufficiently small electrical current to the head which is incapable of producing unconsciousness or a generalized seizure, although it may perhaps result in some momentary confusion. The degree of impairment of awareness is difficult to evaluate since the patient must first be narcotized in order to prevent him from experiencing pain due to the electrical stimulus. IV Sodium Amytal or Sodium Pentothal is employed to produce this narcosis with each treatment. Hirschfeld[8] described beneficial results in anxiety states, paranoid

schizophrenia and psychosomatic conditions, but advised against its use in psychotic depressions. Leo Alexander,[9] Wilcox,[10] Impastato[11] and others also employed sub-convulsive electrical stimulation with the Reiter apparatus, and recommended its use essentially in psychoneurotics, but not in depressions. However, a contrary opinion was expressed by Hargrove[12] and associates, who reported in 1952 that psychotherapy alone gave much better results than non-convulsive stimulation, and that, in fact, the use of NCS may add problems that retard treatment or prevent recovery. Kalinowsky and Hoch[13] have indicated that "the beneficial effects of this treatment should be attributed to the barbiturate narcosis," and that "its value without simultaneous barbiturate injection has been considered as negligible, with the exception of some results which could be easily interpreted as suggestive treatment." My own results with NCS have been disappointing, and I would be inclined to agree with Kalinowsky and Hoch regarding the relative roles of barbiturate injection and the non-convulsive electrical stimulus, particularly in view of the observations of the use of IV Sodium Amytal alone, as reported above.

2. Focal Electrical Stimulation Therapy

In an attempt to reduce the complications and hazards of electric convulsive therapy, localized, unilateral, or Jacksonian seizures were induced by focal electrical stimulation of the head by Impastato and Pacella.[14] Results in a relatively small group of patients treated thus far are not conclusive, but it is definitely apparent that focal or Jacksonian seizures do not result in the memory disturbance or mental confusion associated with generalized seizures nor were there any fractures or back pain. But it was also apparent that focal seizures are less effective therapeutically than generalized seizures. Nevertheless, it is possible that the focal stimulation treatment may be of value in the older or more debilitated patients, and in certain acute paranoid schizophrenics. These schizophrenic patients require especially the avoidance of mental confusion and anxiety which may increase their paranoid productions, so often noted when they are receiving generalized seizures in electroconvulsive treatment. Focal seizures may have to be given at least once daily in order to produce desirable therapeutic responses.

3. Photic-Metrazol Stimulation (Phomac)

Photic stimulation consists in exposing the eyes to a flickering light of a certain intensity, color, and frequency for variable periods of time. The effects on the E.E.G. of photic stimulation have been studied for many years. A most interesting observation was that photic stimulation alone could induce fits in a number of epileptic patients.

The upper and lower limits of effective stimulation frequency of the light vary considerably from one patient to another, but the usual range is about 6 to 15 flashes per second.

It is a common observation that sub-convulsive doses of metrazol alone can readily produce myoclonic reactions in non-epileptic individuals. On the other hand, photic stimulation alone rarely produces myoclonic reactions in the non-epileptic. However, a myoclonic response to light could be markedly activated by small amounts of metrazol.

On a theoretical basis the milder E.E.G. and peripheral responses associated with sub-convulsive or myoclonic treatment may represent the physiological "larvae" of the maximal responses of the generalized convulsion and it may be assumed that possibly these myoclonic reactions, induced especially by photo-metrazol activation, may be associated with a similar type of cerebral physiologic change to that which is produced in much greater degree by the generalized convulsive reaction. It was thought, therefore, that such photic treatment could presumably affect those cases of depression which are relatively mild and which would also respond to minimal courses of regular convulsive therapy.

In a series of depressive cases photic stimulation alone, without metrazol, did not seem to be of any therapeutic value, but metrazol or combined photo-metrazol activation seemed to have some value in the milder or recurrent depressive states.[15] However, considerably more observation is necessary in order to determine the extent to which

"myoclonic" treatments can be of significant value in these cases.

Discussion

There are many more procedures of a biological nature, including various drugs, anesthetic agents and fever treatment, which have been used for psychiatric conditions, but which have not been found effective or where initial favorable results have not been substantiated by the test of time or by other investigators. Some of these agents include histamine, acetylcholine, nitrous oxide, hyperthermia, and the ether drip.

It is rather difficult to attempt a general evaluation of the non-shock therapies, but it appears to me that certain generalizations may be made:

1. Studies dealing with biologic therapies for psychiatric patients indicate a trend away from treatments inducing severe generalized seizures and deep coma, to treatments which are less severe and less hazardous.
2. No form of non-shock therapy as yet, can be entirely or even substantially substituted for the electric convulsive treatment or for the insulin coma treatment, in the respective indicated cases.
3. Only certain selected cases of psychotic depression may be benefited by I.V. Sodium Amytal, or by phomac, or by focal electrical stimulation.
4. Certain of the milder forms of schizophrenia, certain asthenic states, and anxiety conditions may be aided by sub-coma insulin treatment.
5. The therapeutic benefits of non-convulsive electrical stimulation treatment and Carbon Dioxide treatment are still open to question, but nevertheless we cannot discount too easily the favorable observations of such investigators as Meduna, Wilcox and others. However, psychologic therapy still remains the basic tool for the treatment of the psychoneuroses.

Psychotherapy, when employed concurrently with non-shock treatment, should have, for one of its aims, the avoidance or reduction of anxieties attendant upon the biological treatment. This would go under the category of supportive psychotherapy. I do not believe that it is usually advisable to undertake interpretive treatment with the patient while administering a course of non-shock treatment, or, for that matter, even shock therapy. Such interpretations, which may have to do with instinctual strivings, ego defenses, and perhaps transference relationships, may be quite damaging to the normal narcissism of the patient. In general, I believe that psychotherapy should be directed towards the handling and solving of current problems in the patient's life, rather than towards the elucidation of relationships and problems of the distant past, unless they have a direct bearing upon present difficulties. Much more can be said about the procedures of psychotherapy in the different types of cases, receiving one of the varieties of NST, but this would be outside the sphere of this presentation.

BIBLIOGRAPHY

1. Meduna, L. J.: Pharmaco-dynamic Treatment of Psychoneurosis. *Dis. Nerv. Syst.*, 8:2, 1947.
2. Meduna, L. J.: A Modification of Carbon Dioxide Treatment Using Nitrous Oxide. *Dis. Nerv. Syst.*, Vol. 14:4, 1953.
3. Bennett, A. E.: The Value of the So-called Shock Therapies. *Annals of West. Med. and Surgery*, Sept., 1952.
4. LaVerne, A. A.: Variations in Rapid Coma Technique of Carbon Dioxide Inhalation Therapy. *Dis. Nerv. Syst.*, Vol. XIV, No. 9, Sept., 1953.
5. Moriarty, J. D.: Carbon Dioxide Inhalation Therapy of Neuroses. *J. of Clin. & Exper. Psychopathology*, Vol. XIII, No. 3, Sept., 1952.
6. Frank, J. A.: A Critical Evaluation of Carbon Dioxide Oxygen Inhalation Therapy in Mental Disorders. *Am. J. of Psychiat.*, Vol. 110, No. 2, Aug., 1953.
7. Wilcox, P. H.: Psychopenetration. *Dis. Nerv. Syst.*, 12:35, 1951.
8. Hirschfeld, G. R.: Observations with Nonconvulsive Electric Stimulation. *Psychiat. Quart. Suppl.*, 24:297, 1950.
9. Alexander, Leo: Nonconvulsive Electric Stimulation Therapy. *Am. J. Psychiat.*, 107:241, 1950.
10. Wilcox, P. H.: Physiodynamic Therapy (Shock Therapy). *Progress in Neuro. and Psychiat.*, Vol. VIII, Chapt. 34, 1953.
11. Impastato, D. J.: Personal contact.
12. Hargrove, E. A., Bennett, A. E., and Ford, F. R.: The Value of Subconvulsive Electrostimulation in the Treatment of Some Emotional Disorders. *Am. J. of Psychiat.*, Vol. 109, No. 8, Feb., 1953.
13. Kalinowsky, L. B., and Hoch, P. H.: Shock Treatments, Psychosurgery and Other Somatic Treatments in Psychiatry. (Second Ed.) New York, *Grune & Stratton*, 1952.
14. Pacella, B. L., and Impastato, D. J.: Focal Stimulation Therapy. *Amer. J. of Psychiat.*, Vol. 110, No. 8, pp. 576-78, Feb., 1954.
15. Pacella, B. L.: Photic Stimulation of Psychiatric Patients. *Confinia Neurologica, Separatum*, Vol. 13, No. 5/6 (1953).

The Problem of Conjugal Paranoia

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Of all the marital difficulties referred to the New Jersey State Diagnostic Center at Menlo Park by the Domestic Relations Courts, the paranoid state in one of the spouses presents the most difficult diagnostic and disposition problem. In most cases the paranoid state of the spouse had not been recognized previous to the examination at the Center, and it is usually the paranoid spouse who initiates Court action against the marital partner. Very often the plaintiff is able to win the sympathy of his or her family physician, the lawyer, neighbors and, of course, the immediate family, whose indignation has been mobilized and directed against the innocent marital partner. In one instance where the couple was seen by a psychiatrist previous to the referral to the Center, the psychiatrist himself, after a rather cursory examination, considered the paranoid wife emotionally stable, and he gave the husband a lecture on morality and ethical conduct, thus dismissing the case. (See case #1.) I have not had the opportunity to make a statistical study of paranoid states in a marital partner as the basis for marital difficulties, but I have an impression that it is by far a more frequent cause for discord than is generally recognized. The difficulty in diagnosis is due to patient's lucidity, the frequently winning attitude in the interview situation and the ability to present the facts in such a light that if one of the partners is suspected of being mentally ill, it may be not the patient, but his or her mate. It is wise therefore to examine the couple and not only one spouse. However, with extensive experience in this area, the psychiatrist is able to sense that he deals with a paranoid condition, and if he devotes enough time to the examination, he may finally be rewarded with some gross misjudgment on the part of the patient which will confirm his earlier suspicion. The difficulty in disposition of these cases is due to the fact that he or she may be productive, earn a living, support the family, or take care of the home and children. Commitment to a hospital therefore may be more disorganizing to the family unit than the constant squabbles between husband and wife. The result of shock therapies is disappointing. Psychotherapy is difficult to recommend, since the paranoid spouse feels that not he or she should be under treatment, but the mate, and therefore psychiatric approach will usually be refused. Psychotherapy is not only rarely possible but its results are uncertain. The problems of guardianship and custody of the children may be of great complexity and defy simple solution since the patient may be able to conduct his or her business and be an adequate parent. Typical cases of paranoid form of schizophrenia or of paranoid form of involutional psychosis with severe personality disintegration will be excluded from this study, since in these cases the problem of marital disorganization is the same as in any type of psychosis in one of the mates. In discussing the problem of conjugal paranoia, I refer to paranoid state in one of the mates whose personality is well integrated, whose delusional system concerns only the spouse and is either rooted in some reality situation or concealed to such an extent that it may pass unnoticed.

Clinical Picture of Conjugal Paranoia

In practically all the cases under study the first symptom of personality disorganization becomes obvious sometime after marriage, in many instances within the honeymoon period. Long before the appearance of the delusional system, the patient assumes critical attitudes, is fault finding, humiliating, and in general, seems to do everything possible to degrade and demoralize the marital partner. This state of affairs produces marital discord, continuous bickering between spouses and unhappiness, which may precede by years the first evidence of delusional thinking. Sexual preoccupations may start

From New Jersey State Diagnostic Center.

immediately after marriage. The female is usually frigid and accuses her husband of being "hypersexed," a "pervert" or to the contrary, impotent and disinterested. The male patient may show early potency disturbance, may request that his wife commit fellatio or submit to cunnilingus. In other instances there may be a special interest in pornography or to the contrary, extremely rigid, moralistic attitudes toward sex or a combination of both. As the condition progresses and takes root, some kind of separation, first of beds and then of bedrooms may take place. It is not unusual to see the mates sleeping apart for a number of years before the delusions become apparent. After numerous squabbles, the patient may leave the spouse and go to live with parents or relatives, but even during periods of separation the actions and whereabouts of the mate are under continuous scrutiny and if the mate is satisfied with separation, the patient may return and make attempts to resume marital relationship thus interfering in mate's life. Yet, during the premarital courtship, the patient is frequently a satisfactory companion, and often initiates the relationship. Almost always the paranoid spouse starts a whispering campaign against the mate, thus mobilizing the immediate family, acquaintances, and sometimes the community. It is needless to say that the indignation of the members of the immediate family against the innocent spouse is practically always aroused by the patient. The patient is indiscreet in means of defamation, sometimes divulging family secrets or fabricating non-existent situations. Thus one of the patients wrote to the Draft Board that he would like a deferment for the sake of his wife, who conceived from him before they were married. This allegedly was done in an attempt to protect his wife from embarrassment but in reality, nothing embarrassed her more than this fact reported to the members of the Draft Board.

Situations may be created in which the mate will be seen in an unfavorable light by others. Thus, a female patient may provoke her husband into an argument, run out of the house and call neighbors and the police for help, claiming, often unjustly, that the husband had inflicted bodily injury to her. If the actions of the patient provoke a violent reaction in the mate, such as beating or defection of marital duties, the patient is able to point triumphantly to these facts, thus proving the unworthiness of the mate and justifying the complaint. The mate is always accused by the patient of being responsible for actions the patient himself initiated. For instance in one case the wife accused the husband of not coming home and preferring to sleep in the store, thus neglecting marital duties. Further investigation, however, revealed that she locked the doors of the house, would not let the husband in, so that he was forced to sleep in his place of business. (See case #3.)

Accusations of sexual perversion are frequent, particularly accusations of fellatio and cunnilingus or rectal intercourse. Yet, objective investigation always proves that it was the patient and not the mate (with a few exceptions) who initiated the less usual sexual practices. Accusing the mate of being mentally abnormal is frequent, and quite often during interviews with the patient he or she may ask to get psychiatric help for the spouse. Various acts with roots in reality will not only be perverted but also fabricated. Thus, one patient brought to the office towels and toothpicks besmudged with lipstick, in order to prove "her husband's infidelity." She said it could not be her lipstick, since she stopped using it many years ago; yet her lips were thickly colored with red while she was denying the use of lipstick. (See Case #2.) Not only the present reality but also the past will be falsified and various occurrences and facts of the past involving the relationship of both spouses will be perverted. The delusional system may be present quite early or late and assume the form of jealousy and accusations of infidelity. The delusional system is centered around the mate and if others are involved, they are involved only in relationship to the mate. Thus, if a woman feels that all the other women in the neighborhood are prostitutes, she means that they have affairs with her husband. Delusions such as the mate has intentions to kill the patient are less frequent and not related in a very convincing manner unless there are definite signs of paranoid form of schizo-

phrenia. The feeling attached to the delusional content is not jealousy, since jealousy implies love, but it consists in expression of contempt for the mate. In relating the delusions the patient presents its content in such a way that the mate appears unworthy due to acts of infidelity. Thus, in one of my cases the paranoid husband stated that he would "forgive" his wife if she finally admitted to her "transgressions." (See Case #4.) The various means for apprehension of the mate during the commission of the "transgression" is devised to prove the spouses' immorality rather than actuated by pangs of jealousy. Strangers might be involved in the scheme to apprehend the "guilty" mate, and no discretion will be used. In one case the husband called a physician and asked him to "investigate" his wife's genitals in order to determine whether she just had intercourse with someone else. (See Case #4.) In other words, when the patient goes out of the way to find out about the mate's "infidelity," it is not in the hope that the mate will be cleared, but with the hope that the suspicion will be supported by facts. In the interview the patient will give many "details" and "proofs" which sometimes have some basis in reality and therefore may mislead lawyers and judges.

Diagnostic Considerations

The question arises whether this condition deserves a special diagnostic category. Since in many instances the patient is able to function in areas other than conjugal relationship, it seems that a special diagnostic category is necessary for practical purposes. The condition presented here has the earmarks of what Kraepelin described under the name of paranoia.[1]

The name paranoia was previously used as a general term for "insanity with delusions." Kraepelin was the first to use it in the present sense. He defined paranoia as "an insidious development of a permanent and unshakeable delusional system, resulting from internal causes, which is accompanied by perfect preservation of clear and orderly thinking, willing and acting." He remarked that in true paranoia there are no hallucinations and that the patients "remain permanently sensible, clear and reasonable." Patient's delusions are usually of persecutory and grandiose nature. The content of persecutory delusions may be infidelity of the spouse coupled with pathological jealousy. In describing the delusions of jealousy, Kraepelin stated: "One is often in doubt how far real occurrences or delusional inventions are the foundation of what the patients say about the alleged suspicious observation, indeed, about the apparent admission of the husband." In addition to delusions, the patients may exhibit what Kraepelin referred to as "pseudo memories": i.e., memory of events which never took place or which are a falsification of reality. As far as diagnosis is concerned, Kraepelin stressed that apart from general grounds of probability, paranoia should be suspected "if the patients adorn their narrative with very exact details, always increasing with repetition, when they produce their alleged observations a long time after the event." In all the text books of psychiatry, true paranoia in the Kraepelinian sense is considered to be rare. In Kraepelin's statistics only 1 per cent of admission to mental hospitals could be classified as such. Yet, the admissions to mental hospitals do not give a clear-cut picture of the prevalence of the condition in the population, since many paranoiacs are able to work, to support themselves and their families, and in general, they may live through a lifetime without ever coming to the attention of a psychiatrist. The greater incidence of paranoia in the general population than reported and the failure to diagnose the condition was stressed in literature.[2]

The conjugal paranoia, being a true paranoia in the Kraepelinian sense, differs only in its more circumscribed and more specific content. As noted above, the psychotic nature of the condition may be difficult to recognize because of the "preservation of the clear and orderly thinking, willing and acting." Like in Kraepelin's description of paranoia, there are pseudo-memories, adornment of the narrative with details and the delusional content may have some foundation in reality so that "one is often in doubt how far real occurrences or delusional inventions are the foundation of what the patients say about the alleged suspicious observation." Yet, the diagnostic problem may

be more complex if the clear delusional system has not been formed as yet, and the condition is chiefly characterized by the patient's contemptuous, destructive, demanding, fault-finding and critical attitudes toward the mate. In cases of this type, there is no manifestation which could be clearly qualified as psychotic. The patient may be considered just "jealous," or "mean," but since neither his meanness nor jealousy appear bizarre, the whole affair may be dismissed as incompatibility between spouses.

The projective techniques frequently show confusion in sexual identification, suspiciousness, evasiveness, self-destructive tendencies, dependency, poor self-concept and poor controls. They are frequently helpful in determining which of the spouses is the sicker; however, in my experience, several reports by three well trained and experienced psychologists failed to reveal serious personality disintegration in spite of the presence of delusional thinking with a rather bizarre content. This can probably be explained by a rather good preservation of personality structure and intellectual controls in many cases of paranoia. An unhurried, thorough clinical examination of the patient and the spouse by the same psychiatrist remains in my opinion the most accurate tool in the diagnosis of Conjugal Paranoia.

A question arises whether paranoia and paranoid schizophrenia are two different entities or different degrees of the same condition? Even Kraepelin recognized that some of his true paranoics later on developed symptoms of paranoid form of schizophrenia. He felt, however, that if properly diagnosed, paranoia and paranoid form of dementia praecox presented two separate entities, i.e., true paranoia would not develop into paranoid form of dementia praecox.

Case Histories

Case No. 1: Mrs. C., a 31 year old white woman, mother of two children, married for approximately ten years, filed a complaint of inadequate support and requested inquiry into her marital status. The early part of the marital history is not remarkable, except that Mrs. C. had some difficulties with other women while following her husband to various Army camps during his service. After his discharge from the Service, the couple moved close to Mr. C's family. Mr. C, dominated to some extent by his family, entered into a disadvantageous business venture with his brother. Real difficulties started seven years after marriage, following the birth of a second child. Mrs. C decided at first to sleep apart from her husband. This, however, was interrupted off and on by a week or so of a honeymoon relationship, but then again Mrs. C slept apart in a different room, and threatened to leave the house. She became more and more irritable and on many occasions was seen upset and crying. The husband's attempts to resume a friendly relationship usually failed, and once when he asked if she wanted him to bring her a cup of coffee, she answered, "I wouldn't be surprised if you put poison in this coffee." Mrs. C started complaining to neighbors about her husband abusing and mistreating her. Her family physician was so impressed by her "woes" that he helped her to contact a lawyer. When another physician, suspecting a mental disorder, sent the couple to a psychiatrist, the latter, after a short interview, declared that Mrs. C "was of sound mind" and told the husband to treat his wife with more consideration. Meanwhile, Mrs. C spread the news that she was in love with a man in the neighborhood, and she claimed that she went out with this man and his family to the seashore, since they were planning to be married. She talked about it without reserve to strangers and to her husband, who never saw his wife and the neighbor together, but nevertheless believed the story.

Mrs. C was attractively attired and obviously tried to impress during the interview. Her speech was well connected; she seemed to be lucid, cultured, intelligent and somewhat sophisticated. Since she was seen before her husband, her account gave the impression that I was dealing with a gifted woman who just was tired of her inadequate and insecure husband and of the domination of his immediate family. However, here and there during the interview she made sly remarks about her husband's intentions which put me on guard. In the beginning I could find nothing but her emphasis on her husband's peculiar sexual preferences (husband later admitted that it was true), such as shaving her pubic hair, liking to bathe her and occasionally insisting on cunnilingus and fellatio. Then she reported that during one of their reconciliations he took her to a restaurant in New York where he acted "like a big shot" to impress her. She intimated that this invitation had some hidden meaning. She also reported that she found matches from a restaurant, again intimating that her husband, for some reason, spent his time away from home. Mrs. C was able to gain the sympathy of people she was in contact with; yet her behavior was inconsistent. For instance, she related even to strangers the story of being in love with another man, at the same time filing a complaint of non-support against her husband. When this complaint was investigated it was found to be unfounded. The story of having gone out with another man was also unfounded and was probably

what Kraepelin considered "pseudo-memory." Later on further investigation showed that about a year or so ago the husband was brought home by a rescue squad after an automobile accident. Mrs. C felt at that time that her husband was just faking, and therefore she called up the police station to find out whether there really had been an accident. In this case no bizarre delusional material was elicited but the patient expressed her delusional thinking by various intimations and remarks, seeing in simple events some kind of a hidden meaning.

Case No. 2: Mrs. D. This couple was referred because of marital difficulties, and Mrs. D's complaints of her husband's infidelity. At the time of the examination the husband was 51 years old, the wife 38 years old. Mr. D was married previously and divorced his first wife after fourteen years due to poor relations between the spouses. It was Mrs. D's first marriage, and she met Mr. D when she was only 25 years old. The couple had been married for ten years at the time of the examination. Shortly after marriage Mrs. D became suspicious of her husband and on many occasions she left him, going to her mother's home and then coming back unexpectedly. This led to several short separations. A few months prior to the interview her behavior became very unreasonable. She claimed that another woman was coming to the house; she allegedly found nail polish on the garage door and lipstick on toothpicks and towels. Sometimes on coming to the house she destroyed furniture, and on one occasion was shooting up the home with a BB gun. Since she destroyed his furniture, Mr. D was forced to put another lock on the door so that she could not get in. In the office, during the interview, Mrs. D was well dressed, neatly groomed, friendly, making a nice impression; she talked fluently, was able to give biographical data in good chronological order; she was well oriented and in contact with her surroundings. However, it became obvious that she acted under the influence of paranoid delusions. She was very circumstantial, she gave many details to illustrate her point; she produced towels, and toothpicks with lipstick to prove "that another woman was coming to her house"; she claimed it could not be her lipstick, since she had stopped using it when she discovered that someone else was coming to the house. She claimed that she came back home unexpectedly to check on her husband and when she came in he gave her a cold greeting thus hurting her feelings. She also stopped having sex relations with him, she said, because she did not want to "share him with another woman." To substantiate her complaints, she stated that once she found a smudge of lipstick on the door of the bathroom and this, she thought, was done deliberately by the other woman in order to irritate her. On one occasion she also found a "hair of another woman" on the visor of her husband's car; later on, talking to the psychologist during the psychological tests, she told him that this "was a vaginal hair" and therefore she pulled a hair out of her pubic area and put it on the visor to "show the woman that she was still around."

In talking about the beginning of her marriage, she reported that girls greeted her husband "Hello Bob" and asked him "if he will be there," thus implying that even then, ten years ago, he already was unfaithful to her.

She also accused him of being oversexed to the point that her vagina became sore, and that he attempted to practice abnormal sex relations with her.

In this case there are a great deal of pseudo memories and paranoid delusions with erotic content. In spite of the fact that Mrs. D is extremely disorganized as far as her behavior and thinking are concerned, she may impress one during a casual conversation as an intelligent, interesting and charming woman. The towels and toothpicks with lipstick which she produced as "evidence" should not mislead, since it is obvious the lipstick was from her own lips (in spite of her statement that she stopped using lipstick, yet in the office, her lips were thickly covered with it).

Case No. 3: Mrs. E. The couple was referred because of marital discord. At the time of the examination the husband was 40 years old, the wife 34. When examined the couple had been married ten years. Difficulties started right after marriage. At first Mrs. E felt that three sex relations a week was abnormal. She forced her husband to reduce to once a week. Later on she felt that this was also abnormal and very frequently refused relations, stating that she had her periods. Several years before Mr. E started his own business, but Mrs. E did everything she could to ruin it. She started accusing him of having relations with a policeman's wife; she made scenes at home; at times she did not let him into the house and he had to sleep on the floor at his place of business. She complained to her minister, to her lawyer, and to the policeman that her husband was a sex pervert and lately she accused most of the women in the neighborhood of being prostitutes. One morning when the husband went to the post office and returned in twenty minutes, she accused him of having had intercourse with a girl who lived down the street. She also felt people were not neighborly, because she came from the South.

In the interview situation Mrs. E was pleasant, cooperative and talkative. Listening to her one could picture her husband as a stupid, bragging and brutal individual in need of psychiatric care. Her account sounded plausible until she reported, although without conviction, that her husband threatened to kill her. She accused him of situations for which she herself was responsible. Thus, she blamed her husband of sleeping in the store instead of coming home, when in reality she herself barred his entrance. She also accused him of being a sex pervert who forced her to commit fellatio. She claimed that he was going with other women; she made disparaging remarks about his claims of be-

ing a business man, and in general did everything to put him in a bad light.

Case No. 4: Mr. G, a 55 year old white male who emigrated to the United States from Germany in 1924, filed a complaint in the Domestic Relations Court charging his wife with being indifferent and quarrelsome. The wife, now 47 years old, is the mother of two children born to the couple in 1942 and 1944. At the time of the examination the couple had been married about 19 years. Mrs. G is of Polish descent and of Catholic faith, whereas her husband is Lutheran. In 1925 she was forcibly married by her parents to an elderly man, but she soon left him and when the latter died, she struck up an acquaintance with Mr. G, who was a neighbor in the same rooming house. Difficulties between both spouses started almost immediately after marriage. There was constant bickering, fights and mutual accusations. Mr. G was described by his wife as a very dependent, childish individual, subject to temper tantrums during which he occasionally broke dishes and stamped his feet. At the same time he attempted to assume the attitude of the "lord" of the family, demanding obedience and respect from his wife, yet relying on her in business and management of home affairs. Mr. G frequently had to take a "rest" and "relax" while his wife labored with the children and in the store. An incident was described when shortly after marriage he told her that his friends meant more to him than she did. He frequently left her alone and went to New York to visit these friends. Very early after marriage he beat her, the beating having been provoked by arguments concerning money. On one occasion he threw her to the floor and commanded that she crawl before him, which she refused to do. On many occasions he would come home in a bad mood, look for dust on the walls and dirt in the corners, accusing his wife of being untidy.

About 10 years before this examination, Mr. G requested that they sleep in twin beds. For the past 6 years they have had no sex relations at all. He was never too potent and never throughout the marriage have they had relations more than once a month. Approximately 8 to 9 months before the examination, Mr. G started accusing his wife of going out with other men. At approximately that time, Mrs. G suffered a fractured arm and when she went to the doctor for treatment, Mr. G questioned her inquisitively about the time she spent outside of the home. Each time she was a little late coming home or talked to a customer in the store, he felt that she was having an affair with someone. Once when she came back from her doctor's office, he followed her upstairs and asked her who had brought her home. Then he looked around the rooms, opened the closets, and finally said, "It is funny that no one is here," thus implying that he suspected his wife of coming home with somebody else. On one occasion when she came home with an attack of headache and lay down, he looked at her inquisitively, said she looked poorly, and called a doctor to examine her. When the doctor came he asked him to examine her genitals since he suspected that she had been out with a man and therefore had a headache.

When the children were born he was cold and reserved, but within the past year or so he became more attentive to them, in an effort to alienate them from their mother.

In the interview situation Mr. G was well dressed, courteous and gentlemanly. He spoke slowly and deliberately about his marriage. He reported that it was very hard to satisfy his wife, that she wanted him to do everything her way, but in reality this didn't trouble him as much as her desire to break up the marriage. He accused her of being immoral with other men, and he said that he would forgive her if she would just admit her immorality.

He reported that once, coming back from town, she left the car outside. When he checked the car he saw that the windows were "steamed up." When asked what this meant to him, he answered that it looked "as if more than one person had been in the car breathing heavily, as usually happens during sexual intercourse." He added, "In my opinion there shouldn't be any secrets in marriage." When asked whether he would like to break up the marriage, he answered emphatically, "No." As in other cases of conjugal paranoia, the projective tests did not reveal grave personality disintegration in spite of the fact that the routine mental examination elicited definite delusions of paranoid nature. In this case the paranoid delusions were preceded by eighteen years of hostile, humiliating and destructive attitudes, without any other evidence of psychotic thinking. Mr. G has been productive, able to manage a store, although relying strongly on his wife. During the interview he constantly projected his own thoughts on his wife and related the story in such a way that she, rather than he, would have been suspected of paranoia had he not revealed frank delusional material.

Etiological Considerations

A question arises whether the patients under study would develop paranoia in some other form if they remained single? Liber[3] reported six patients with mild depression and psychosomatic symptoms which in his opinion were entirely due to marital conflicts. He feels that marital conflicts are on the whole important contributory factors to mental illness. Freud[4] reported the case of a young man who developed episodes of delusions of jealousy the object of which was his wife, and which always appeared on the day following the act of intercourse. Since Freud believed that paranoia was a defense against homosexuality, he felt that in this particular case "after every satiation of the heterosexual libido, the homosexual component, likewise stimulated by the act, forced

for itself an outlet in the attack of jealousy." Whether in this case the episodes of paranoid jealousy were due to stimulated homosexuality or to other causes, the fact remains that paranoid explosions were connected with sexual activity of the patient. The projective tests in this study indicate that these patients are insecure, weak, dependent, suspicious personalities with confusion in sexual identification. Clinical investigation frequently reveals sexual preoccupations, frigidity and low potency. In addition, one of my female patients revealed that she always preferred to be a man and another female patient bore the male name of Lester, given by her parents who had been greatly disappointed by not having a boy. Furthermore, in a large number of cases spouses use separate beds and later on rooms for a number of years preceding the onset of delusions. Thus, the studies conducted here seem to indicate that homosexual awareness or at least some degree of confusion in sexual identification is quite common. This seems to support Freud's views on homosexuality in genesis of paranoia. The extremely hostile and humiliating attitudes toward the spouse are probably a projection of patient's hostility toward himself. Since the patients feel weak, insecure, and in many instances rely on the spouse for management of their affairs, I believe that the humiliating and superior attitudes toward the spouse are also a reaction formation to these dependent needs and to low concept of one's self. Mr. G. in case #4 for instance ordered his wife to crawl before him, and yet, playing the role of a "lord," he relied on her to manage his business, and was quite upset when she stopped helping him. I have not had the opportunity to follow patients who separated from their spouses, but since conjugal relations seem to be the precipitating cause of their attitudes and delusions, I believe that at least in some cases great improvement may be obtained. Conjugal relations, by which I mean not only sexual intercourse, but everything that makes part of responsibilities as spouse and possibly parent induce in the patient a general feeling of inadequacy with which he copes by utilizing the defense mechanisms of projection and reaction formation.

Summary

An attempt is made to demonstrate a specific type of paranoia with delusions and pathological attitudes directed against the marital partner. The pathological attitudes characterized by humiliating and destructive acts against the spouse may precede by many years the outbreak of frank paranoid delusions. The patient always preserves good contact with the environment, is able to conduct his affairs and may be able to veil projections so skilfully that not the patient, but the spouse, may be considered either abnormal or may become the target of indignation of the patient's immediate family, neighbors, etc.

Projective techniques do not always elicit the gravity of the clinical condition, but are valuable in evaluation of personality structure of the patient and in case of both spouses being under suspicion, they indicate which one is the sicker. The best diagnostic tool, however, is an unhurried and careful interview of both spouses by the same psychiatrist. The problem of disposition is also extremely difficult, defying simple solutions, due to the apparent lucidity and productive capacity of the patient. The patients who develop conjugal paranoia are inadequate, weak individuals with confusion in sexual identification. Homosexual conflicts and a general feeling of inadequacy aggravated by conjugal relationship, seems to be the most important factors in genesis of conjugal paranoia. Four representative cases were reported.

BIBLIOGRAPHY

1. Kraepelin, E.: Manic-Depressive Insanity and Paranoia (Translation), *E. and S. Livingstone,* Edinburgh, 1921.
2. Bonner, H.: The Problem of Diagnosis in Paranoic Disorder. *Am. J. of Psychiat., Vol.* 107:677-683, March, 1951.
3. Liber, B.: Elusive Mental Cases: Marital Conflicts. *N. Y. State J. Med., Vol.* 50:2287-89, October 1, 1950.
4. Freud, S.: Certain Neurotic Mechanisms in Jealousy, Paranoia and Homosexuality (1922). Collected Papers, Vol. II, *The Hogarth Press,* London, 1948.

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A Psychiatric Floor in a General Hospital

(Report of First Year)

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In 1951 Bennett, Hargrove, and Engle[1] conducted a survey of psychiatric facilities in hospitals in the United States and Canada and reported that only 4% of all general hospital beds have psychiatric facilities. This survey also brought out that "1000 hospitals reported no psychiatric service, and 17 had some psychiatric service, 60 per cent of the general hospitals with psychiatric services are governmental, while less than 40 per cent are private. Private general hospitals have thus evaded their duty in adequate patient care."

It is possible that this evasiveness may result from the lack of appreciation of the need for such facilities, a fear that marked architectural changes will be necessary, concern over the financial cost, and/or a dread of legal and administrative problems involved. This paper is a report on the handling of those problems in a general hospital and on the patients treated during a one year period. The statistics on percentage of occupancy and the comparison with the other departments in the hospital cover the period January 1, 1953 through December 31, 1953. The statistics on finances cover the period September 8, 1952 through August 31, 1953. The breakdown on the patients is from the period March 1, 1953 through February 28, 1954.

Memorial Hospital, Corpus Christi, Texas is a City-County Hospital, providing both private and charity care, having a total capacity of 296 beds, of which 23 are psychiatric and occupy the seventh floor of a seven story annex. The psychiatric floor was opened on September 8, 1952. The steps involved in planning the floor have previously been described by Cline[2]. Convincing the Hospital Board and state officials, who had to approve the expenditure of federal funds in hospital construction, that such facilities were needed, was not too difficult after examination of the so-called "Insane Ward" of the County Jail, and pointing out that no other facilities were available in South Texas.

Problems confronting the administration were those common to any hospital governing body with regard to management of services and those peculiar to a psychiatric floor. Among the latter were:

Personnel:

Procurement of trained personnel interested in the care of psychiatric patients.

Financial:

a) Psychiatric therapy is often long term and at general hospital rates might be beyond the reach of many persons.

b) The increasing percentage of insurance coverage for hospital care and the relative infrequent coverage of psychiatric treatment by hospitalization policies would add to the financial difficulties.

Structural:

The goal was to keep the overall plan as much like the other floors as possible, yet to maintain adequate safeguards for the patients. The maintenance of a seclusion department for the more disturbed patients also presented a problem since it was to be on the same floor and staffed by the same personnel as the open section.

Administrative:

a) Would the mixing of neurotics and less disturbed psychotics, treatment and observation patients, male and female, private and staff, white and colored patients create too much confusion?

b) Would the physicians other than psychiatrists admit patients to the department, since at that time there was only one psychiatrist in the community?

c) What ancillary facilities would be available, or needed?

d) What type of patients to anticipate?

The problems mentioned above were handled in the following manner:

From the Psychiatric Service, Memorial Hospital.

Personnel:

Fully trained personnel was not available in all capacities. However, with a nucleus of four trained nurses with either post graduate training or experience, an in-training course for the vocational nurses and orderlies was established. They were aided by lectures by the psychiatrists (another having entered practice in the community between the time of the original planning and the subsequent opening of the floor). This was instituted before the floor opened and was continued afterward. Additional personnel had been obtained by the continued search for more registered nurses, the developing interest in psychiatric nursing by affiliation with the vocational nurses training program and the establishment of a post graduate course in psychiatric nursing for vocational nurses. Since July, 1952, when the hospital received its full quota of five interns, one intern had been assigned to the Psychiatric Service, in conjunction with the Medical Service, for a period of two months. The nursing staff varied from 3 to 7 registered nurses, 4 to 8 vocational nurses, and 3 to 5 orderlies. In 1954, affiliation with the James R. Dougherty School of Nursing was arranged and it is hoped that by assisting in the training, more psychiatric nurses will be available.

Financial Problems:

Although the rates for the treatment are approximately 1 1/2 to 1 2/3 the rates of private hospitals, most of the patients whom I have treated will pay the increased rates in preference to entering a private hospital since the nearest one is 200 miles distant. Other factors influencing a decision is the desire to be treated in the community, previous treatment in our hospital, or the reputation of the hospital. Voluntary health insurance plans have been inconsistent in their coverage of psychiatric patients. Bennett, Hargrove, and Engle[1] surveyed voluntary health insurance in 1951, and at that time reported that "of the 84 Blue Cross Plans more than ¼ discriminated, wholly or in part, against hospitalization benefits for nervous or mental disorders." Although this paper is not a review of hospitalization insurance, 31.3 per cent of the patients treated on the Psychiatric Service had hospitalization insurance, which provided part of the cost of their hospitalization.

The length of hospitalization was much shorter than had originally been anticipated, as shown by the following:

Days	*Percent*
1 to 3	35.9
4 to 7	23.3
8 to 14	22.9
15 to 30	14.3
31 to 60	3.2
60 plus	0.4

Over 50 per cent of the patients stayed 7 days or less, and over 75 per cent received 14 days or less. The average length of stay was 11.8 days, as compared to an average stay of 5.8 days for the total hospital. An important factor is the fact that 75.3 per cent of the patients were residents of Corpus Christi. Of the 24.7 per cent not residing within the city limits many lived within a radius of 30 to 40 miles and could therefore be followed on an out-patient basis after dismissal. Another factor which operated is that no coma-insulin therapy was given due to the shortage of personnel. If the patient were thought to need coma-insulin therapy referral was made to other hospitals where such facilities were available. The percentage of occupancy, both on a monthly and yearly basis, averaged approximately 10 per cent less than the total hospital. In the entire hospital the percentage of occupancy was 66.1 per cent, on the Medical Service 64.3 per cent, and 54.5 per cent on the Psychiatric Service. During the first year's operation for every dollar of actual expense charged to the floor, there was one dollar and forty-seven cents potential income. Only during the first two months was the potential income less than the actual expense and in the five months of the second year of operation this ratio has been on dollar and sixty-six cents potential income to one dollar actual expense.

Structural:

The planning of the ward was previously described by Cline,[2] "the only differences we would accept were the installation of safety screens on all windows and the inclusion of five small seclusion rooms on a sub-corridor,

where noisy or overactive patients could be safely treated until their behavior became more conventional." In all other respects the architecture of this floor is the same as the other floors in the hospital.

Administrative:

a) Mixing of the various categories of patients has created a negligible amount of confusion.

b) Over ⅓ of the patients admitted have been under the care of physicians other than psychiatrists. This will be discussed later.

c) Ancillary facilities available at the time of the opening of the ward were:

A psychiatric Out-Patient Clinic in operation for several years.

An Electroencephalographic Laboratory in operation a few months prior to the opening of the floor.

The hospital Social Service Department, which enlarged its activities somewhat to include some planning for some of the patients, as well as obtaining histories from relatives, if the patient was unable to give an adequate history, either because of his illness or poor understanding of English.

Through the assistance of the Women's Auxiliary diversional occupational therapy program was instituted, at first on a purely voluntary basis, but within the past two months the Auxiliary has agreed to underwrite the salary of a vocational nurse trained in diversional occupational therapy by one of the members of the Auxiliary who is a graduate occupational therapist.

d) Types of patients. In comparison with the total patients in the hospital there has been little difference as to sex distribution. The total hospital admissions show 43.4 per cent male, 56.6 per cent female; for psychiatric patients, 46.1 per cent male, and 53.9 per cent female. The most significant differences were seen in the racial and religious distributions. Of total hospital admissions 52.5 per cent were White, 43.1 per cent were Latin-Americans, and 4.4 per cent were Negro; the psychiatric floor showed 89.1 per cent White, 9.3 per cent Latin-American, and 1.6 per cent Negro.

The lower incidence of Latin Americans is probably due to the less acceptance of psychiatric hospitalization by the Latin-Americans and generally an inability to afford private treatment. A large percentage of the Staff Care of the hospital is given to Latin-Americans and only three beds of the psychiatric floor are for Staff Patients. As would be expected from this, the percentage of Catholics was lower on the 7th floor—17.1 per cent; in the total hospital, 29.2 per cent. The percentage of Protestants was greater, 53.2 per cent as compared with the total hospital, 35.1 per cent. During the first year none of the Hebrew faith were admitted and the overall hospital shows only 0.2 per cent. The remainder gave no religious preference.

Marital Status: Of the patients admitted, 61.9 per cent were married, 11.3 per cent were single, 8.2 per cent were widowed, 6.9 per cent were divorced, 9.1 per cent were separated and 2.6 per cent were not given. These figures are quite at odds with the usual statistics which report that psychiatric disorders are less frequent in married individuals.

Age: The majority of our patients are in the third, fourth, and fifth decade of life as seen by the following table.

Age	*Percent*
0 to 19	3.8
20 to 29	17.8
30 to 39	28.4
40 to 49	23.7
50 to 59	12.8
60 to 69	7.9
70 plus	5.6

Types of Treatment. Few of the patients received forms of treatment which are usually associated with hospitalization for psychiatric disorders.

Type of Treatment	*Percent*
Sub-coma Insulin	10.5
EST	5.3
Sub-coma Insulin and EST	12.4
Other therapy	71.8

The high incidence of "Other Therapy" is the result of the relatively higher percentage of illness other than psychogenic and the relative frequency of care of the patient by nonpsychiatrists.

Results: Due to the absence of valid criteria for the results of psychiatric illness, a

statement of results is equivocal, at best. Our figures show 60.6 per cent Improved; 11.4 per cent Recovered; 23.8 per cent Unchanged; 3.2 per cent not recorded; and 1.0 per cent Expired.

Transfers: Approximately 15 per cent of the patients were transferred or dismissed to other hospitals. These included 2.3 per cent who entered other private hospitals and 13.2 per cent who entered Government Hospitals—State, Veterans Administration, and U.S. Public Health Service.

Diagnosis and Treatment: In the following table Type I is Disorder caused by or associated with impairment of brain tissue function, excluding Delirium Tremens; Type II is Acute and Chronic Alcoholism; Type III is Delirium Tremens; Type IV is Involutional Psychotic Disorders; V is Other Psychogenic Psychotic Disorders; VI is Psychophysiologic Visceral and Autonomic Disorders; VII is Neurotic Disorders; VIII is Transient Personality Disorders; IX is Transient Situational Disorders; and Type X is Other, not mentioned above.

TABLE OF DIAGNOSIS AND TREATMENT

Type of Illness	Psychiatrists	Internists	General Practitioners	Surgeons	Orthopedists	Urologists	Neurosurgeons	Oral Surgeons	Proctologists	Total
I	17	3	3	2			1		1	27
II	21	9	42				1			73
III	6	1	2							9
IV	8	1								9
V	90	1	2	2						95
VI	9	1								10
VII	105	6	15				1			127
VIII	5	2	2							9
IX	8	3								11
X	24	13	37	9	1	1	1	2		88
	293	36	107	13	1	1	4	2	1	458

Certain features of the above chart require explanation, not only for the inclusions but also for the omissions. The hospital charts were classified by the first diagnosis listed. In the category *Others,* Type X, often the psychiatric diagnosis was listed but not as the primary one. In this category were also the barbiturate intoxications, the self inflicted wounds, some neurologic patients, those who were admitted primarily for other treatment, but due to age were considered in need of psychiatric nursing. Many of those had no psychiatric disorder listed that probably one should have been included. There were no patients in whom the primary diagnosis was mental deficiency. The paucity of diagnosis of the psychophysiologic visceral and autonomic reactions is the result, probably, of diagnosis by symptoms, rather than by dynamic evaluation. It was encouraging to see that over ⅓ of the patients were not under the direct care of a psychiatrist, which was a better than expected use of the facilities by those in other specialties and general practice. Another feature which was encouraging was the consultation rate which is considered indicative of the patient care and the optimum rate is considered 15 to 20 per cent. In the entire hospital the rate was 8 per cent; on the Medical Service 10.7 per cent; and on the Psychiatric Service 14.1 per cent. This figure does not include the majority of the consultations which were for the purpose of commitment.

Summary

A review of the operation of the Psychiatric Service in a General Hospital during the first year of operation and a summary of the statistics for the admissions for one year period have been given. It has been felt by those of us who have used the service that it has filled a very definite need in the community; that it has been successful, not only from the therapeutic, but also from the financial standpoint; and it is hoped that this report might aid others who are considering the installation of similar facilities.

REFERENCES

1. Bennett, A. E., et al.: Present Status and Future Needs of Psychiatric Facilities in General Hospitals in the United States and Canada, *Am. J. Psychiatry,* 108:321 (Nov.) 1951.
2. Cline, W. B., Jr.: Seventh Haven, *Texas Trends,* 9:2 (Fall) 1952.

Results of Lobotomy in Chronic Psychosis

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It has been common experience that there are many psychotics who do not respond to the usual treatments: electro-convulsive therapy, insulin coma therapy, psycho-therapy or the various adjunctive therapies such as occupational therapy, recreational therapy, educational therapy, and music therapy. With the advent of the various types of prefrontal lobotomy for use in the treatment of mental illness, it has been hoped that such a procedure would fill a gap that our other treatment modalities could not cover. Five years ago our hospital began selecting for prefrontal lobotomy, psychotic patients who continued to be a therapeutic problem after all other treatments had been unsuccessful. Our medical staff selected patients for surgery, not on the basis of diagnosis, but according to outstanding behavioral problems, such as assaultiveness, agitation and active withdrawal. These patients were a marked management problem because it was impossible to obtain their cooperation in the hospital treatment program. In most instances, this overt abnormal behavior was associated with or a reaction to hallucinations and delusions. Of these patients 86 per cent had been hospitalized five years or longer and apparently were doomed to indefinite confinement at this institution. This paper attempts to summarize the results of prefrontal lobotomy performed over a period of approximately five years, upon 80 chronic psychotic patients.

The surgical procedure used was as follows:

"With the patient under intratracheal anesthesia, incisions were outlined over each frontal region, each incision being centered 2 cm in front of the coronal suture and 3½ cm lateral to the midline. After the field was draped, the scalp incisions were made. Trephine openings were then made in the skull on each side using the Becker trephine, and the dura was cauterized and incised. A ventricular needle was introduced in the direction of the anterior horn of the lateral ventricle and the sphenoidal ridge was identified just anterior to the plane of the anterior horn of the lateral ventricle. This plane was then used in the subsequent dissection. The cortex was cauterized and incised with a blunt instrument. Then, using blunt dissection and suction, the incision was carried out through the white matter to the gray matter overlying the spenoidal ridge. The dissection was carried laterally to include all the temporal fibers and was carried medially to include all the white matter in the direction of the falx. The dura was closed with nylon sutures. The buttons of bone were replaced and the incisions were closed in anatomical layers with interrupted nylon sutures."

Following surgery, these patients were maintained for approximately one week on the surgical ward where they were given intensive nursing attention. In only a few instances has toilet retraining been necessary. We were constantly on the alert for any complications, such as hemorrhage or infection. When it had been determined that the early postoperative period was uneventful, the patient was transferred to the acute intensive treatment service where the ward activities were such as are commonly described in a total push program. In this hospital this program involves carefully prescribed occupational therapy, an individualized exercise program, recreational therapy, group sports activities, and library and canteen visits. In addition to these activities, participated in by all of the patients, we find that a great many can profit from such experiences as Educational Therapy, Manual Arts Therapy, Physical Therapy, individualized Industrial Therapy assignments, and Group or Individual Psychotherapy. Some patients are given electric shock treatment postoperatively when warranted, since it has been our experience that some individuals, who before surgery showed only temporary or no beneficial effects from such treatments, may be considerably helped by EST following lobotomy. After the patients have been on the intensive treatment service for a time, the treatment program is varied, depending upon the improvement shown. Some are transferred to continuous treatment wards, others to privileged ward, and others are suffi-

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ciently recovered so that an adjustment in the home community can be considered.

In an attempt to evaluate the therapeutic effectiveness of this surgical procedure, an overall rating scale was devised. The five levels in the rating scale used were: (1) greatly improved, (2) moderately improved, (3) some improvement, (4) no change, and (5) worse. This rating scale was used to evaluate the changes seen in the general condition of each patient during the period following the surgical procedure. An attempt was made to use this rating scale on a conservative basis. The "Greatly Improved" group were usually well enough so that they have returned to their homes. A few were considered well enough to do so if conditions at home had not been so adverse. Those who have not left the hospital are on ground privileges which reflects a marked improvement over their preoperative condition. The "Moderately Improved" group were those who previously required close supervision but who now get along with only minimal attention, either in the hospital or at home. In those rated as "Some Improvement" are those individuals who still require a moderate amount of supervision although their overall condition shows some improvement. Of the 80 individuals included in this study, we are able to evaluate only 77, as three died too soon following surgery to ascertain any clinical change.

Overall Results

1. Greatly Improved	11
2. Moderately Improved	15
3. Some Improvement	40
4. No Change	11
5. Worse	0

It was noted that a few patients required a considerable period (in some cases as long as six to twelve months) before showing improvement. Other patients may exhibit a marked remission of symptoms soon after surgery but regress gradually during the following few months. The results reported above reflect the condition of the patient from one to five years following surgery, which should be a sufficiently long interval to reflect the effects that can be attributed to the lobotomy.

In addition to an estimate of the overall change in the condition of these patients, it would be helpful if the *nature* of the changes obtained as a result of lobotomy could be evaluated. In preparation for presentation to the lobotomy board, the ward psychiatrist writes a psychiatric summary. The behavioral and clinical symptoms that it was hoped would be alleviated by surgery were described in these summaries. These reports were scrutinized and a separate rating scale was devised for each patient by listing their outstanding symptoms. The ward psychiatrist was then asked to judge each characteristic on the rating scale as showing great improvement, moderate improvement, no change, or worsened.

The following manifestations were listed with sufficient frequency to justify scrutiny: assaultiveness, agitation, delusions, hallucinations, impulsiveness, hostility, negativism and withdrawal. The change that was most marked was in assaultiveness. Of the 77 patients, assaultiveness was listed in the write-up as an outstanding behavior characteristic in 49 cases. Following surgery, 31 showed great improvement, 17 showed moderate improvement and one patient had no change in this characteristic.

The second most pronounced change noted was in agitation and there was great improvement in 14, moderate improvement in 17, and no change in nine patients of the 40 cases showing this type of behavior.

The third symptom that showed considerable change was impulsiveness. This was of considerable importance in 13 patients. Following surgery, three showed great improvement, eight showed moderate improvement, and two showed no change.

Hostility, a pronounced symptom in 13 patients, responded with great improvement in five, moderate improvement in three, and no change in five patients.

Negativism, which implies an active form of resistiveness, was a problem in 20 patients. Following surgery, three showed great improvement, ten moderate improvement and seven no improvement.

Withdrawal, implying a passive resistiveness, was found in 23 patients, with only two showing great improvement, five moderate improvement, ten no change, and six patients demonstrating a more marked withdrawal than previously.

Autistic thinking, manifested in the form

of delusions, was an outstanding symptom in 43 of the 77 patients evaluated. Surgical intervention, however, produced great improvement in only four, moderate improvement in 15, and no change in 24.

Hallucinations disturbed 25 of the 77 patients and the response to lobotomy was, great improvement in two, moderate improvement in 11 and no change in 12.

The following case is a typical example of the changes that may be expected after a prefrontal lobotomy. It will be noted in this case, as was quite typical in our series, that the major behavior abnormalities were assaultiveness, aggression and impulsiveness. The improvement noted in this patient was conservatively classified as moderately improved.

Patient W. D., a 31 year-old white male, received a lobotomy in June 1952. The history indicated that he was a high school graduate who was slightly dull intellectually, but rather gregarious and outgoing, taking part in various school sports such as baseball, basketball, boxing, and track. He had a relatively uncontributory family history. He enlisted in the Marine Corps after graduation from high school in August 1940. In November 1941, he began to make somatic complaints at sick call and it was noted that he had ideas of reference. Early in 1942 he was returned from overseas duty because of serious threats of suicide and ideas of influence. In 1942 he was separated from the service because of a schizophrenic psychosis, characterized by paranoid delusions, ideas of reference, and hallucinations of smell. The patient was discharged to the custody of his father and remained with him from 1942 until 1949, when he came to this hospital. He worked fairly regularly during this seven year period. After he was home for three years his mother died and the patient broke off an engagement to a childhood girl friend. He gradually became more irritable and difficult to get along with. In 1947 he began to threaten his father and began to drink excessively. He had periods of assaultiveness toward his father, began to express auditory hallucinations and had the idea that people considered him a homosexual. His hospitalization was precipitated by the threat to kill his father. Upon admission to this hospital in March 1949, the patient expressed numerous delusions of a paranoid nature. He denied his real parentage and claimed that he was born in England, whereas he had been born in the States. He also indicated that he was a Negro instead of Caucasian. He was extremely irritable, demanding, threatening, often assaultive, impulsive, hyperactive, and required frequent somatic-therapy, which gave only temporary relief. He has had five courses of electro-convulsive therapy and a course of insulin therapy, all of which produced only temporary improvement. He required supervision on the acutely disturbed service during much of the period of hospitalization before surgery.

After lobotomy was performed in June 1952, the patient was transferred to the Acute Intensive Treatment Service where he was treated as indicated in the fore part of this report. For a period of about six months he continued to remain somewhat irritable and would have an occasional outburst of anger directed toward anyone about him. There was only a slight improvement in sociability but he was not assaultive nor overly impulsive. During the seven month period following surgery he showed such marked improvement in his condition that it was possible to place him on an open ward. Since that transfer his condition has remained essentially unchanged. He has been extremely cooperative, has a pleasant, friendly smile, and has shown no assaultiveness, or impulsiveness, and no hyperactivity. Occasionally, the patient has difficulty rising in the morning and at times misses breakfast because he has overslept. It should be noted that this change is in the direction of decreased psychomotor activity and is correlated with the elimination of the impulsiveness and assaultiveness that was seen prior to surgery. He continues to maintain paranoid delusions, still denies his actual parentage and claims that he has several stepfathers around the hospital. There has been no change in his autistic thinking but there is definitely no tension or anxiety associated with this abnormal ideation. The patient performs an occupational therapy detail regularly, demonstrating a normal attention span, cooperativeness and little distractability.

It would appear that there is little change in the psychotic ideation of these patients but adverse behavior manifestations have been altered considerably, as manifested by the high percentage of improvement shown in assaultiveness, agitation, and impulsiveness. In other words, we were finding that lobotomy does not eliminate the psycosis in many of our patients but enables them to live more comfortably with it and, as a result, they are easier to manage. The improvement in the 77 chronic patients, who were not helped by any other form of treatment, may be best indicated by the fact that ten are out of the hospital, either going to school or working, and three more could be considered for discharge if conditions at home were more favorable for their adjustment. The results of lobotomy on carefully selected patients, whose illness has been very chronic and who have not responded to other types of treatment, are sufficiently favorable to warrant further use of this therapeutic procedure.

Book Reviews

OFFICE PSYCHIATRY by Louis G. Moench, M.D., The Year Book Publishers, Inc., 310 p. $6.00 (1952).

The frequency and extent of emotional situations as they encroach upon all phases of the practice of medicine are developed in the light of the causality of usual run of illnesses. The author presents in easy-to-understand language the mechanisms that may underlie symptoms, contribute to and aggravate illness, and vitally bear upon the treatment and its eventual result.

The contents properly begin with the concept of prenatal influence, adverts to the reciprocal relations between maternal and fetal hormonal balance, and discusses the controversial philosophy respecting personality characteristics and the child's acquirement of definite behavior patterns long before kindergarten exposure has taken place. The chapter elaborates upon the progressive methodology of child-rearing, the latter's position with respect to his parents and his collateral environment, and is concluded with a discussion of the values of discipline imparted to the child within a consistent setting.

Baffling problems are vividly developed, and their understanding is aided by pictorial sketches as well as case material descriptive of the behavioral situations of the adolescent as he passes through his varying periods of physical and social disequilibrium. Mode of therapy and the importance of the source of greatest effectiveness and acceptance by the adolescent, concludes the chapter.

The sundry areas of psychosomatic disorders frequently masked as medical illnesses are logically presented, and a discussion of their appropriate recognition illustrated by drawings and pertinent case material, rounds out this well written chapter.

The neuroses and character neuroses are considered by the author in the ensuing 30 pages. The reactions of anxiety, conversion, neurasthenia, hypochondriasis, phobic and obsessive-compulsive are discussed in a manner sufficient to acquaint the non-psychiatric specialist with these situations in his work-a-day responsibility to his patient. The discussion of the character neuroses, which follows, is rather limited, and responsibility for their diagnosis and difficulty of treatment had best remain within the realm of the seasoned psychiatric practitioner.

The author indulges freely in cartoon demonstrations to visually pinpoint the highlights of the textual material already well interspersed with case illustrations. The reader is introduced in a cursory manner to symptomatology of the major psychoses. There is no identification of their presently recognized categories, the author rather stressing the family physician's first responsibility for appropriate diagnosis of a psychotic process regardless of the stage of the anomaly.

The chapter on organic and toxic psychoses discusses alcoholic, drug and barbiturate intoxications from the viewpoint of prevalence, withdrawal symptomatology, and treatment; and calls attention to the death hazard to which the barbiturate user is exposed, as a result of respiration failure or hypothermia. The chapter includes a symptomatologic identification of the psychoses—presenile and senile, and in closing cites an illustrative case of central nervous system lues, inclusive of neurological and serological findings and the beneficial results produced by antibiotic therapy.

Respecting the problems of suicidal risk, the neuroses and psychoses are tersely yet ably discussed as to their involved dynamics. The latter are further exemplified descriptively, by case material, as well as by illustrative caricatures which are freely interspersed for visual emphasis of this perplexing problem.

The final third of the book attempts to acquaint the non-psychiatric specialist with the general scope of what is sought to be gleaned from a psychiatric examination, and defines the adjunctive technics available to the professionally qualified examiner to further his diagnostic investigation, and to evaluate the patient's resources prior to programming appropriate therapy. The author suggests that a fairly representative percentage of patients seek medical advice either for psychologic reasons or because of emotional situations which are associated with or complicate their diseases. Based upon this premise the general physician occupies a unique position to help people. It is socially acceptable for the patient to visit his family doctor first. But to seek the services of a psychiatrist raises the possibility of social stigma as to the patient's mental integrity, as well as the latter's personal implication and resentment. Founded upon this proposition, the author feels that the general practitioner should treat most of the organic psychoses except where the patient's behavior demands special hospitalization. The author further suggests that where uncomplicated, delirious reactions (infectious, febrile, postoperative, toxic, etc.), the intoxications, psychosomatic conditions, and most of the neuroses, may also be treated with benefit, by the family physician. In the absence of special skill or experience the author indicates that the untrained general practitioner should avoid treating patients suffering from the manic-depressive psychoses, deep involutional melancholias, the severe reactive depressions, the schizophrenias, or the major sex deviants. Here the greatest service that the general practitioner can render is to recognize or suspect these conditions as they appear, and to direct such patients to psychiatrists for appropriate specialized care. The varying modalities of specialized therapy employed by the specifically trained specialists are identified, their accessions traced, and their utilitarian values are briefly described in the two final chapters. These latter comprise the theoretical and factual aspects of psychoanalysis, and include pithy thumb-nail sketches of the treatment of mental illness begin-

ning with the Hellenic era, tracing the methods through the "noninjurious tortures" of the 18th century, and the 19th century drastic doctrines of Benjamin Rush who advocated corporal punishment, starvation and the diabolical device of strapping the patient to a board and spinning him to bring more circulation to the head. The author methodically reviews the ensuing somatic therapies, among which are employed emetics, purgatives, castration—even the removal of the clitoris for hysteria. Despite past disappointments to the answer of the problem of the psychoses, the author discusses the advent, technic, indications and action of insulin, the administration of which reduces the glucose substrate available for neuron metabolism. Electroconvulsive therapy, its indications, contraindications, procedure and complications also receive the author's skillful observations. The reader is then methodically introduced to the surgical approach to mental disorder. He traces the first mcdern postulation of Moniz in 1936, of frontal lobe removal to break up the "stabilized short circuit." He then includes Cobb's consideration of reduction of associated pathways, and Freeman's cutting apart the thalamus and frontal lobes to separate affect and ideation with resultant bleaching of the affect. The various operative approaches—Moniz', Fiamberti's transorbital approach, the "ice pick" method popularized by Freeman, topectomy and thalamotomy—are then described as a finale to this closing chapter.

The book contains an excellent bibliography at the end of each chapter and has a generous index. It is written in simple language, does not unnecessarily indulge in psychiatric jargon, outlines with clarity situations and modes of coping with them by the general practitioner and equally indicates and discusses patient problems requiring specialized care. The book may be consulted with profit by the general physician entrusted with the professional care of every day ills, where problems of the psyche either precipitate or complicate the conditions for which the patient is seeking assistance.

Lewis J. Siegal, M.D., LL.B.

FIFTY YEARS OF MEDICINE by Lord Horder. Philosophical Library. 68 p. $2.50.

This sixty-eight page volume is a somewhat expanded version of the three Harben lectures delivered in December, 1952, at the Royal Institute of Public Health and Hygiene. In these lectures the distinguished British Specialist sets forth some of his ideas on medicine, the medium in which his own life had been lived for fifty years.

Beginning with a glance at medicine at the turn of the century, he discusses all too briefly Chemotherapy, The Birth of Clinical Pathology, Advances in Surgery, Endocrinology, and Some Modern Trends in Medicine.

In the second lecture he notes the Enlargement of Medicine's Boundaries, Physical Medicine, Rehabilitation, which he says is not new and which he traces to work in World War I, and then mentions Industrial Medicine and Nursing.

In the third lecture he considers Medicine and the State and notes some actions and trends which he does not approve. Then there are comments on Birth Control, Noise Abatement, Cremation (of which he does approve), and Euthanasia (of which he does not).

Psychosomatic medicine he considers old hat—known to the Greeks and a form of medicine which every physician should practice always. There is little or nothing about mental or nervous diseases except a notation about their prevalence.

In many ways the book is a disappointment and the only particularly noteworthy thing about it is that Lord Horder wrote it.

Francis J. Braceland, M.D.

BOOKS RECEIVED

ON APHASIA. By Sigmund Freud, M.D., Translation. E. Stengel, M. D., M.R.C.P. Cloth. $3.00. Pp. 105. International Universities Press, Inc., 227 West 13th Street, New York 11, 1953.

DORLAND'S AMERICAN ILLUSTRATED MEDICAL DICTIONARY. Edited by Richard M. Hewitt, A.M., M.D., E. C. L. Miller, M.D., and Arthur H. Sanford, M.A., M.D. Twenty-second edition. Flexible binding. $11.50. Thumb-indexed. Pp. 1736 with 720 illustrations, including 49 plates. W. B. Saunders Company, West Washington Square, Philadelphia 5, 1951.

THE CIBA COLLECTION OF MEDICAL ILLUSTRATIONS. Volume I—Nervous System. By Frank H. Netter, M.D., Cloth. $6.00. Pp. 143 with 104 plates. Ciba Pharmaceutical Products, Inc., Summit, N. J., 1953.

CLINICAL NEUROLOGY. By Bernard E. Alpers, M.D., Sc. D. (Med.), Professor of Neurology, Jefferson Medical College, Philadelphia; Neurologist to the Jefferson, Pennsylvania, and Wills Hospitals, Philadelphia. Third edition. Cloth. $9.50. Pp. 880 with 243 illustrations. F. A. Davis Company, 1914-16 Cherry Street, Philadelphia 3, 1954.

PSYCHIATRIC DICTIONARY. By Leland E. Hinsie, M.D., Assistant Director, New York State Psychiatric Institute and Hospital, and Jacob Shatzky, Ph.D., Research Librarian, New York State Psychiatric Institute and Hospital. Second edition with supplement. Cloth. $15.00. Oxford University Press, 114 Fifth Avenue, New York 11, 1953.